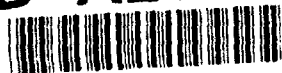


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Purchases of Food from Private Sources
In Soviet Urban Areas

Vladimir D. Treml

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1. The purpose of this study is to estimate the purchases of foodstuffs through private channels by the Soviet urban population with the Berkeley-Duke survey of 1,000 recent Soviet emigres being the main source of data.

Soviet urban communities have several sources of supply of foodstuffs. The public retail trade network consists of stores, shops, street vendors, and various eating facilities operated by the Ministry of Trade, cooperative trade organizations, and a number of other state agencies. The supply of food to the public retail trade sector is planned and administered in a centralized fashion, and prices are set by state authorities. The main private sources of food are the urban kolkhoz markets which are supplied in a decentralized fashion and at which prices are essentially determined by supply and demand. Most foodstuffs sold in urban kolkhoz markets are produced on private plots but some come from kolkhozes and sovkhoses. A certain amount of foodstuffs consumed by urban dwellers are produced on private plots operated by urban households usually in close proximity to towns. Some of these may find their way to kolkhoz markets or are consumed within producing households.

A certain amount of foodstuffs is sold by private vendors outside the state-designated kolkhoz market areas. It should be added that while sales of privately grown food by private vendors is legal on kolkhoz markets in Soviet law, "off-market" operations are not. In the past both Western and Soviet analysts

dismissed these "off-market" sales as small operations of street vendors of apples, or "pirozhki." However, as it will be discussed below, the evidence provided by the emigre survey indicates that these sales are not insignificant.

It should be noted that there is some overlap between the public and the private retail markets. The state cooperative network operates stalls at urban kolkhoz markets selling, to use the Soviet terminology, "foodstuffs contracted on commission basis from private sources at prices prevalent at local markets." In other words the state operates alongside private vendors on kolkhoz markets selling at free market prices.

In 1977 total sales of foodstuffs in urban areas according to official Soviet statistics consisted of¹

	Million rubles, actual prices	
Sold through state and cooperative network	95,000	92.8%
"Contract" sales by cooperative networks in kolkhoz markets	1,500	1.5%
Sales on kolkhoz markets	<u>5,800</u>	<u>5.7%</u>
total food sales	102,300	100.0% .

¹Soviet statistical sources report total retail trade sales broken into state and cooperative. However, our study is focused on urban markets only and the latter were estimated by multiplying the mid-year 1977 population of 161,043,000 times per capita sales of food in urban areas of 599 rubles, or 96,465 million rubles. (Narkhoz 78, p. 436).

2. In the past both Soviet and Western authors expressed some doubts about the validity of kolkhoz market sales statistics. In order to check the official Soviet statistics and to obtain more data on kolkhoz market sales by cities and republics which are not available in regular Soviet statistical sources,¹ two specific questions concerning food purchases from private sources were included in the emigres questionnaire. The respondent families were asked to record their purchases on urban kolkhoz markets and from "off-market" sellers.

Before we discuss the numerical results of the emigre survey and the estimates based on it several technical points must be mentioned.

While the objective of this study concerns the sales by private sources we had to modify it to include "contract" sales of the cooperative network. Our respondents simply did not remember or could not distinguish between their purchases of foodstuffs from a private individual or from a state-operated stall in the same market.

The year 1977 was selected as the target year for estimates of purchases of food from private sources although this is an approximation. The emigre respondents were asked for information about food purchases during their "last normal year," i.e., the year prior to their decision to leave the USSR. The distribution

¹Soviet annual statistical volumes, Narodnoe khoziavistvo SSSR have been regularly reporting urban kolkhoz market sales in current prices for the USSR as a whole. However, virtually no statistics are available on a consistent basis for republics or major cities.

of households included in the survey by their "last normal year" is as follows:

1970-73	22	1977	256
1974	39	1978	279
1975	63	1979	178
1976	142	1980	<u>23</u>
			1,007 .

Thus, one option was to estimate food purchases for all or most years covered by emigre respondents. However, were we to do this the number of respondents from a particular city or a republic would be smaller and the margin of error greater. In fact, for some years we would have lost information for several cities. Furthermore, tests showed that the differences between mean purchases for most years were not statistically significant.

In selecting a single year such as 1977¹ we had to decide whether to adjust data for other years than the target year. For instance, there is evidence that kolkhoz market prices were rising throughout the 1970s.² Thus conceivably we could inflate ruble values of purchases in years prior to 1977 and deflate them for years after 1977. However, estimated kolkhoz price indexes are very rough and adjustments of all data to correspond to 1977

¹1977 is both the mean and the median year.

²K. Waedekin (1985, p. 3) estimated that between 1970 and 1983 kolkhoz market prices rose by 70 percent.

prices would have probably created serious errors.¹ Without price adjustment we could assume that some understatement of values prior to 1977 would be cancelled by overstatement in values after 1977.

Accordingly, all survey-reported purchases were treated as representing 1977 values.

In order to estimate total purchases of food from private sources for the entire urban USSR the data provided by the emigre survey had to be normalized or reweighted. At this state in the development of our project on the second economy in the USSR the best choice for normalization characteristics was mid-year population.²

The method of estimation was fairly simple. The data on purchases of food from private sources supplied by our respondents were converted to a per capita basis and averaged for all republics covered by the survey. Within each republic separate per capita average purchases were calculated for one or

¹Approximate price indexes for kolkhoz markets can be derived from ratios of kolkhoz to state retail prices which can be computed from published Soviet statistics. See B. Severin 1979, and discussion in Section 3. It should be added that kolkhoz market prices vary greatly by regions and for proper adjustment of values we would have needed price indexes for all republics covered in the sample.

²Two possible characteristics of the parent urban population suggest themselves: population and income. Other characteristics such as sex and age distributions, nationality, education, occupations, etc., a priori do not appear to be correlated with food purchases. Household income estimates for the emigre sample will not be ready for some time. However, even when they are completed it is doubtful that reliable income estimates can be made for parent population, particularly by cities, and reweighting by income does not appear promising at this time.

more cities and for the rest of urban areas. As the next step average per capita purchases for each republic were calculated by reweighting separate per capita averages for cities and other urban areas by using the appropriate mid-1977 population figures. The grand total for the urban area was then calculated as the sum of products of republican average per capita purchases and population.

Separate estimates were made for purchases in urban kolkhoz markets and from "off-market" vendors.

All underlying data as well as per capita estimates for various subtotals are recorded in Table 1.

Several approximations were used in the making of the USSR estimate. We have a relatively large number of respondents for nine republics with virtually no households from Estonia, Lithuania, Kazakhstan, Kirgizia, Tadzhikistan, and Turkmenistan. Under the circumstances Latvia was used as an analog for all three Baltic republics, i.e., average purchases calculated for Riga and the rest of the urban areas of Latvia were multiplied by, respectively, the total population of three capitals (Riga, Vil'nus, and Tallin) and by the rest of the population of the three republics. Uzbekistan was used in the same manner as an analog for Kazakhstan, and for the three remaining Central Asian

Table 1
Estimating Total Purchases of Food in Urban
Kolkhoz Markets and from Off-market Vendors, 1977

Republic/City	Mid-Year population (1,000s)	<u>Per Capita Purchases</u>	
		Markets Rubles	Off-Markets Rubles
<u>RSFSR</u>	94,495	134.93	18.48
Moscow	7,688	198.34	19.15
Leningrad	3,988	139.66	6.12
Rest of urban areas	82,819	128.82	19.01
<u>The Ukraine</u>	30,097	319.44	28.54
Kiev	2,105	206.90	16.51
Odessa	1,041	422.44	35.66
L'vov	648	570.00	66.88
Kharkov	1,415	238.75	82.50
Rest of urban areas	24,888	322.71	25.19
<u>Belorussia</u>	5,087	227.42	16.47
Minsk	1,252	171.84	2.12
Rest of urban areas	3,835	245.57	21.15
<u>Uzbekistan</u>	5,813	329.11	5.82
Tashkent	1,711	398.90	19.78
Rest of urban areas	4,102	300.00	0
<u>Kazakhstan</u>	7,956	244.64	31.28
Alma-Ata	883	60.00	60.00
Rest of urban areas	7,073	267.69	27.69

Table 1
(continued)

Republic/City	Mid-Year population (1,000s)	<u>Per Capita Purchases</u>	
		Markets Rubles	Off-Markets Rubles
<u>Georgia</u>	2,557	369.59	32.01
Tbilisi	1,047	354.04	37.37
Rest of urban areas	1,510	380.38	28.30
<u>Azerbaidzhan</u>	3,035	353.51	13.07
Baku	1,448	390.24	27.40
Rest of urban areas	1,587	320.00	0
<u>Moldavia</u>	1,497	397.85	86.79
Kishenev	492	253.39	62.13
Rest of urban areas	1,005	468.57	98.86
<u>Baltic republics*</u>	4,665	313.14	11.98
Riga	822	150.19	27.47
Rest of urban areas	3,843	348.00	8.67
<u>Armenia</u>	1,884	583.95	118.05
Erevan	969	539.06	51.50
Rest of urban areas	915	631.48	188.52

Table 1

(continued)

Republic/City	Mid-Year population (1,000s)	<u>Per Capita Purchases</u>	
		Markets Rubles	Off-Markets Rubles
<u>Total for 12 republics</u>	157,086	208.31	19.74
Large cities	25,509	247.80	24.50
Rest of urban areas	131,577	200.65	18.82
<u>Estimates for Kirgizia, Tadzhik and Turkmen</u>			
<u>republics**</u>	3,959	280.85	28.72
Large cities	1,293	283.54	33.47
Rest of urban areas	2,666	279.55	26.42
<u>Total USSR</u>	161,045	210.09	19.96
Large cities	26,802	249.52	24.93
Rest of urban areas	134,243	202.22	18.97

*Using Latvia as an analogue for all three Baltic republics.

**Estimated as per capita purchases averaged for Uzbekistan and Kazakhstan.

republics.¹

The per capita estimates made in Table 1 were then converted to total 1977 purchases as follows:

	(Million rubles) actual prices
Purchases in urban kolkhoz markets	
Large cities	6,687.6
Rest of urban areas	27,146.6
Total urban	33,834.2
Purchases from off-market vendors	
Large cities	668.2
Other urban areas	2,546.6
Total urban	3,214.8
Total purchases of food	37,049.0
Less "contract" sales	1,500.0
Total purchases of food from private sources	25,549.0 .

The implications of these estimates are far reaching. They mean that the actual sales on urban kolkhoz markets in 1977 were about 5.6 times higher than reported in official Soviet

¹Various modifications of these calculations were tried such as, for instance, using additional large cities for Baltic and Central Asian republics, or using Latvia as an analog for Estonia, and Belorussia as an analog for Lithuania. None of these modifications, however, affected final estimates to any appreciable degree.

statistical sources. Counting "off-market" sales of foodstuffs they also mean that in that year income from urban sales of foodstuffs produced on private plots and national income in agriculture was higher by some 30 billion rubles compared to what was recorded in Soviet national income accounts. Soviet urban population buys, according to these estimates, close to one-third of their food from private sources.¹

One caveat must be entered here. As will be shown below urban kolkhoz market prices are two to three times higher than state retail prices. A spread of this magnitude must serve as a powerful incentive for speculators to buy certain products in the state retail trade network (probably in collaboration with trade employees) and resell them at kolkhoz markets (V. Tremi 1983, pp. 182-183). To the extent that these illegal transfers take place some food purchases will be counted twice. Profits from such transactions would accrue not to agricultural producers but to urban middlemen and speculators.²

An examination of the data on per capita purchases in Table 1 reveals significant variations among cities and republics. This is not surprising as market forces determining the relative

¹In addition to purchases of food from private sources in kolkhoz urban markets and from "off-market" vendors 18.5 percent of households included in the survey have reported having purchased 53 rubles per capita of food while vacationing in rural areas. These purchases should be counted with intra-village kolkhoz market sales and are not a subject of investigation in this study.

²It is possible that some food products sold by "off-market" vendors were also not produced on private plots but purchased by these vendors in the state retail network.

size of per capita purchases are rather complex and include the supply of foodstuffs from private sources, the availability of comparable foods in the state retail network, and prices, as well as income and demographic characteristics shaping the demand for food.

The data in Table 1 do not indicate any particular regional pattern. A priori one would expect that per capita sales in kolkhoz markets would be smaller in larger cities because, as a rule, state retail networks in these cities are better supplied. However, this is not true for Moscow, Leningrad, Odessa, Kharkov, Taskhent, and Baku.¹

Perhaps the most interesting aspect of the estimates based on the emigre survey is the striking differences between them and the data reported in official Soviet sources.

It would be analytically interesting to go beyond the comparison of total USSR sales as reported in official Soviet sources and our estimate and compare per capita sales by republics and cities. Unfortunately, as was mentioned above, standard Soviet statistical sources do not regularly publish data for urban kolkhoz market sales except totals for the whole country. Thus, data for the late 1970s was found only for the city of Moscow and five republics and, in some instances, the data are not quite comparable. Nevertheless the comparison shows a fairly high degree of correspondence. This can be seen from

¹Differences between average per capita purchases in cities and in the rest of urban areas in these republics are all statistically significant at the 0.95 probability level.

Table 2 which shows regional per capita purchases expressed as ratios of the USSR average. Thus, the ratios are very close in the case of the RSFSR and Latvia and, given the uncertainties underlying the data, sufficiently close in other cases to suggest that they reflect the same regional patterns.

The only relatively large set of Soviet official data for kolkhoz market sales in individual cities is available for 1963. Despite the span of 14 years per capita purchases expressed as ratios to the USSR average for 13 cities selected from this set show a high degree of correspondence with ratios derived from the emigre survey as can be seen from Table 3.

While there are obvious discrepancies the overall degree of correspondence is high, as indicated by Spearman's rank correlation coefficient of +0.66.¹ Elimination of Erevan brings this coefficient up to +0.76. The high degree of correspondence is even more remarkable when we consider the fact that the two sets of data refer to periods which are 14 years apart and that the official Soviet data cover only urban kolkhoz markets while

¹Spearman's rank coefficient is calculated as

$$S = 1 - \frac{\sum d^2}{N^3 - N}$$

where d is the difference between ranks of each pair of observations and N is the number of observations. The coefficient ranges from -1.00 for perfect inverse correspondence in ranks, through 0 for no correspondence, to +1.00 for perfect direct correspondence.

Table 2

Urban Kolkhoz Market Sales per Capita
(USSR average = 1.00)

	Based on Emigre Survey	Official Soviet
RSFSR	0.64	0.70
Ukraine	1.52	2.12 ¹
Moscow	.94	1.02-0.54 ²
Georgia	1.76	1.50-1.59 ³
Baltic republics	1.49	1.45 ⁴
Armenia	2.78	1.02

Notes

1. Kolkhoz sales in the Ukraine are available only for 1983 and without cooperative trade contract sales. The latter were estimated by using the ratio of contract to kolkhoz sales in USSR without RSFSR.
2. Moscow kolkhoz sales available only for 1975 and 1980 and without cooperative trade contract sales, which were estimated by using RSFSR ratios for appropriate years.
3. Georgia kolkhoz and contract sales available only for 1975 and 1979.
4. Official data for the Latvian republic only.

Table 3

Per Capita Sales on Urban Kolkhoz Markets
(USSR average = 1.00)

City	Emigre survey (1977)	Official Soviet data (1963)
Moscow	.94	.62
Leningrad	.66	.62
Kiev	.98	1.82
Odessa	2.01	7.45
Kharkov	1.14	2.96
Minsk	.82	.49
Tashkent	1.90	2.24
Alma-Ata	.29	.86
Tbilisi	1.69	2.90
Baku	1.86	1.79
Kishinev	1.21	1.59
Riga	.71	.81
Erevan	2.57	1.37

the emigre survey includes kolkhoz markets and contract sales through cooperative trade outlets.

The obvious similarities between official Soviet urban kolkhoz market sales and the estimates made on the basis of the emigre survey suggest stable regional patterns of supply of food over time and indirectly testify to the accuracy of our estimates.

3. There are probably several reasons explaining the difference of almost 27 billion rubles between the official figure for the 1977 urban kolkhoz market volume of sales and the estimate derived from the emigre survey.

We cannot preclude the possibility of a moderate upward bias in our estimates. As was explained above the reweighting of survey-derived per capita purchases was done on the basis of population. However, one could a priori hypothesize that purchases of food in urban kolkhoz markets with their higher prices and better quality of produce are income elastic. Suppose the households covered by the emigre survey had incomes higher than the average income for the urban USSR. In this case, adjustments for income differentials and reweighting would produce a lower estimate for the kolkhoz market sales.

This issue will require further study but at this point there is no reason to suspect a significant overstatement in the estimate. In the first place, preliminary studies suggest that the official income of our emigre respondents (i.e., state wages

and transfer payments) are close to average USSR urban income or are only marginally higher.¹

Secondly, regression analysis of the relationship between income of households covered in the survey and their purchases in urban kolkhoz markets indicates a rather weak positive correspondence, i.e., sample data offer no evidence of strong income elasticity of demand for food available in kolkhoz markets.²

Accordingly, we must search for the explanation of the differences between official Soviet kolkhoz market statistics and our emigre survey-based estimates in a probable understatement of the former.

This is not a new discovery as several Soviet and Western authors had suggested that official Soviet statistics on urban kolkhoz markets are understated.

In a study of household budgets of some 1,000 emigre families who left the USSR in the early 1970s and now are residing in Israel, G. Ofer and A. Vinokur (1980, pp. 55-58) report that actual purchases in kolkhoz markets were higher than reported in Soviet official sources. Thus, instead of being

¹Preliminary estimates show that the average annual money income per capita estimated for the emigre sample is 4.5-9.6 percent higher than the average for the entire urban USSR. See Appendix B.

²Testing the relationship between official or legal income of households and their purchases of food in kolkhoz markets gave the following results: $R^2 = 0.047$; intercept 797 rubles, slope of the regression line 0.119; both significant at a 0.0001 probability level. The slope of the regression line of 0.119 is surprisingly low.

about 4-5 percent as reported in Soviet sources kolkhoz market sales accounted for about 6-9 percent of total food sales in the USSR.

In a very thorough and well-documented study Stephen Shenfield (1979) comes to the same conclusion. After a comprehensive survey of Soviet sources and a careful analysis of statistical techniques used in estimating the volume of sales in urban kolkhoz markets Shenfield convincingly shows that the understatement stems from the exclusion of a number of kolkhoz markets located in smaller towns and from an understatement of quantities sold in all markets.

Shenfield suggests that the corrected share of urban kolkhoz market sales in total sales of foodstuffs in the USSR is in the range between 8 and 13 percent (p. 39), that is, twice as high as the officially reported share of 4-5 percent.¹

Our estimated kolkhoz market sales even without the "off-market" transactions yield a share of about 21 percent, which is much higher than Shenfield's.

There could be several explanations for the difference between Shenfield's and our estimates. In the first place, Shenfield's study deals with a longer time span and most Soviet sources used by him were published between the late 1950s and early 1970s. Thus his conclusions are generalized for the 1960s and early 1970s, while our estimate refers to 1977. In all

¹The figures above refer to kolkhoz markets shares in total food sales in the USSR. They are, therefore, somewhat lower than the 5.7 percent shown on p. 3 which refer to the share in urban food sales.

likelihood the number of urban kolkhoz markets and their sales in real terms have been growing throughout the period and the phenomenon of exclusion of small markets and the understatement of quantities sold in official Soviet statistics has been growing as well.¹ Thus, in all probability the difference between official Soviet statistics and actual sales has increased between late 1960-early 1970s and 1977.

Probably the main reason for the difference between Shenfield's and our estimates lies with the issue of recording of prices on kolkhoz markets. Shenfield tentatively concludes that official surveys conducted by Soviet authorities record kolkhoz market prices correctly or even overstate them somewhat (*ibid.*, pp. 18-19). Our evidence suggests that this is not so, or, possibly, that in recent years official surveys began to understate kolkhoz market prices.

In a rather revealing report picked up by Radio Liberty, Alexander Birman, a noted Soviet specialist in finance, noted that "the state does not fix prices on the kolkhoz markets but does set top limits" (Radio Liberty 1976, p. 12). The implications of this statement are clear - in attempting to control price inflation in urban kolkhoz markets the authorities

¹In a recent article K. Waedekin (1985, p. 5) reports that the total number of urban kolkhoz markets in official Soviet enumeration declined from 960 in 1966 to 824 in 1978. However, he failed to note that the capacity of these markets actually grew in the same period from 1,249,400 "selling places" to 1,375,000 (*Vestnik statistiki*, No. 5, 1979, p. 78, and *Narkhoz* 1965, p. 667). For a recent description of the understatement of kolkhoz market sales see A. Andreev and V. Semenova (1979, pp. 57-59).

operating and policing the sales would post or try otherwise to place ceilings on prices. Peasants selling their produce would, needless to say, do their best to disregard the posted limit and charge higher prices. Facing state statisticians and recorders they would at least try to report lower prices. It is also quite possible that officials responsible for the recording of prices would simply report the posted price limits rather than go around from stall to stall attempting to enforce these limits.

Evidence that official Soviet kolkhoz market statistics understate prices can also be deduced from the following inquiry.

Radio Liberty has been conducting interviews among recent Soviet émigrés arriving in Western Europe and we can approximately estimate the average ratio of kolkhoz market and state retail prices for some 12 key food products.¹ These ratios were calculated as 3.00 in 1981, 3.79 in 1982, and 3.04 in 1983.

We can also derive similar ratios from official Soviet statistics. Annual volumes of Narodnoe khoziaistvo regularly report statistics on urban kolkhoz trade in several forms such as kolkhoz urban trade as a percent of total food sales in actual prices and as a percent of total food sales, but measuring kolkhoz trade in state retail prices.² These data make it possible to approximately estimate the ratio of kolkhoz trade to state retail prices for comparable food products. For the three

¹For a description of Radio Liberty survey data and the derivation of these ratios see Appendix A.

²See B. Severin 1979, for a description of Soviet kolkhoz market statistics and calculations of price relatives.

years given above these ratios were calculated respectively as 2.23, 2.35, and 2.30. Emigre survey-based ratios reflecting actual prices on kolkhoz markets are thus higher, on the average, by over 40 percent than ratios derived from official Soviet statistics.

Both ratios derived from Radio Liberty surveys and from official Soviet statistics suffer from serious problems such as rounding errors, choice of weights, comparability of coverage, etc., and thus can be taken only as approximations. However, it does appear that a strong case can be made to conclude that actual kolkhoz market prices are higher than those reported in Soviet statistical sources.

In summary we can thus conclude that purchases of food from private sources in Soviet urban areas are much higher than reported by Soviet authorities and that the difference is explained by both understatement of quantities sold and prices charged in official Soviet statistics.

Appendix A

Estimating the Ratio of Kolkhoz Market and State Retail Prices on the Basis of Radio Liberty Data

The Soviet Area Audience and Opinion Research office of Radio Liberty/Radio Free Europe has been conducting surveys of recent Soviet emigres concerning the availability of food in the USSR.

As of this time results of the following five surveys have been published (Radio Liberty 1982, 1983, 1984):

/	Period covered	Number of correspondents	Number of cities covered
1	January-Novmeber 1981	782	102
2	December 1981-July 1982	698	103
3	August-December 1982	403	86
4	January-June 1983	444	102
5	July-December 1983	358	85

Respondents were asked about the availability and prices of some 16¹ food products in state stores and on kolkhoz markets in the area of their last residence in the USSR. While the design of this project has some shortcomings the results appear to be

¹The number of products varied slightly from survey to survey.

reasonable. For instance, the reported average state retail prices agree closely with numerous other sources on these prices, and kolkhoz market prices vary within a relatively narrow band.

Using survey data we calculated ratios of prices in urban kolkhoz market and in state retail stores for some six product groups for which they were available. The main problem was the selection of appropriate weights for the averaging of these ratios. Under the circumstances, the following weighting procedure was used:

- Ratios for beef, poultry, mutton, and pork were weighted by their respective total state outputs as published in Narkhoz to arrive at the average ratio for meat;
- The average ratio for vegetables was calculated as the unweighted mean for beets, cabbage, and tomatoes.

Survey No. 1 covered the whole of 1981. For 1982 and 1983 we had two surveys each, and average annual ratios were calculated as simple unweighted means. In this manner average annual ratios of kolkhoz-to-state retail prices were calculated for six product groups. For example, for 1981 these ratios were

Potatoes	4.05
Vegetables	3.75
Fruit	2.42
Meat	2.60
Milk	2.31
Eggs	2.42.

And, as the last step, the weighted average ratio was computed for all six product groups using quantities sold in the

appropriate year in Moscow¹ kolkhoz markets and emigre-survey derived prices. Calculated in this manner the weighted ratios of kolkhoz market and state retail prices were

1981	3.00
1982	3.79
1983	3.04.

¹In the last 10 years or so the only data on quantities of produce sold in kolkhoz markets available is that for the six product groups in Moscow. The only other choice would be to use state retail trade sales data in rubles, but both quantities and prices would be inappropriate for kolkhoz markets.

Appendix BEstimating the Difference between 1979 Per CapitaMoney Income Derived from the EmigreSample and the Average for the Urban USSR

The estimates were made as follows. Average annual wages net of taxes per capita were calculated for each of the nine republics covered by the sample and then reweighted on the basis of the urban population of these republics as of mid-1979. Wages for Lithuania and Estonia were taken to be equal to wages in Latvia, and Uzbek wages were used as an analog for Kazakhstan, Kirgizia, Turkmenia, and Tadzhikistan. Calculated in this manner the average annual wage was 1,065 rubles per year per capita. However, this figure understates the true sample wage because it includes lower wages earned in years prior to 1979. The adjustment factor was estimated on the basis of annual increases in wages of workers and employees as reported in Soviet sources and the distribution of income earners in our sample over 1970-1979 as 1.049. The average annual wage per capita based on sample data and corrected to 1979 was 1,117 rubles. In 1979 personal income taxes amounted to 12 percent of net wages of workers and employees for the entire USSR, and the same percentage was used to adjust the estimated net wage of 1,117 rubles to include income taxes. Accordingly, the average gross

annual wage derived from the sample and reweighted was estimated as 1,251 rubles.

Estimation of a comparable wage for the entire 1979 Soviet urban population was done as follows. The average non-agricultural wage (i.e., excluding the sovkhoz labor force) was reported as 1,959.6 rubles. According to the official census statistics the permanent urban employed population was 89,382,000 as of January 17, 1979. This figure was adjusted upward by 1.007 to account for the difference between permanent and resident population and by 1.016 to move the figure to mid-1979. Thus, the resident employed urban population as of mid-1979 was 91,448,000. Using the average non-agricultural wage of 1,959.6 rubles per year and the resident mid-1979 total urban population the average urban wage per capita was then estimated as 1,087 rubles. This figure is still not truly comparable to the wage derived from the emigre sample because the non-agricultural wage shown above is for the entire Soviet non-agricultural labor force and the emigre sample covers urban employment only. Urban wages are higher than non-agricultural wages averaged for the entire labor force, because the mix of non-agricultural occupations is different in rural and urban areas. We do not have these estimates yet but the difference is probably between 5 and 10 percent. Using these percentages as the first approximation the average urban per capita wage can then be estimated as 1,141-1,196 rubles per year.

These figures are clearly subject to some error, but taking them as they are we can calculate that the emigre-sample derived

wage is between 4.5 and 9.6 percent higher than the average wage for the whole urban population.

Based on the emigre sample data reweighted by urban population other forms of money income, i.e., interest on savings accounts and transfer payments, amount to 14.4 percent of net wage income. At this state in our research we must assume that these additional payments are the same for the sample and the entire urban population and hence the same 4.5-9.6 percent difference applies both to wage and to total money income.

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